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T070466

1. Location of Reading Room:	2. Expected Release Date:
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3. Document Type:

[X] Letter
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a. If letter or memo:
To: G. L. Voelz, Dir.; HSL, AEC-ID
From: R. B. O'Brien, Mgr, Nuclear and Operational Safety Div., Idaho Nuclear Corp.
Subject: RESEARCH SUMMARY, OB-58-70

b. If report:
Title:

4. Document Date:	c. If publication:
April 29, 1970	Name: Volume: Issue:

5. Summary (2-3 lines indicating the major subject(s) of the document): Transmitting three copies of summary of the research project "Thyroid Exposure due to Skin Absorption of Iodine". This research is being carried out by Nuclear and Chemical Technology Division, Inc.

6. Name and telephone number of person completing form:	7. Organization:	8. Date:
Burton R. Baldwin (208) 525-0203	Lockheed Idaho Technologies Co.	March 31, 1995

[ ] Check here if a copy of the document is being sent to Headquarters.

HUMAN RADIATION EXPERIMENTS

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TOTAL PAGES	
BATE NUMBER RANGE	
DOCUMENT NUMBER RANGE	

HEI FORM DOCUMENT NO.: T070247
DOCUMENT NO.: T070466
DOCUMENT TITLE: RESEARCH SUMMARY, OB-58-70
CROSS REFERENCES:
ITEMS OF INTEREST:

April 29, 1970

Research Summary
OB-58-70

G. L. Voelz, M.D., Director
Health Services Laboratory
Idaho Operations Office
U. S. Atomic Energy Commission
Idaho Falls, Idaho

Dear Dr. Voelz:

Attached are three copies of a "200-word summary" of the biomedical research project, "Thyroid Exposure due to Skin Absorption of Iodine," as requested in your letter received April 13, 1970.

Please note that this research project is now being carried out by the Nuclear and Chemical Technology Division rather than by Nuclear and Operational Safety.

Very truly yours,
Original Signed by
R. B. O'Brien

RBO:rp

R. B. O'Brien, Manager
Nuclear and Operational Safety

Attachments - 3

cc: GL Voelz

bcc: w/o attach.
CM Rice
JA Buckham
FO Cartan
OL Cordes
RB O'Brien

SIE-78a

PUBLICATION BY AEC AUTHORIZED ☐

NOTICE OF RESEARCH PROJECT

SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

U.S. ATOMIC ENERGY COMMISSION

AEC CONTRACT NO. AT(10-1) 1230

SUPPORTING DIV. OR OFFICE:

NAME & ADDRESS OF CONTRACTOR OR INSTITUTION: (State the division, department, or professional school, medical, graduate or other, with which this project should be identified.)

Idaho Nuclear Corporation, P.O. Box 1845, Idaho Falls, Idaho 83401

TITLE OF PROJECT:

Toxicity of Radioelements - Thyroid Exposure Due To Skin Sorption of Iodine

NAMES, DEPARTMENT, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS AND OTHER PROFESSIONAL SCIENTIFIC PERSONNEL: (not including graduate students) engaged on the project, and fraction of man-year devoted to the project by each person.

Fred O. Cartan	Chemist	0.5
Jack L. Clark	Senior Technician	1.0

NO. OF GRADUATE STUDENTS ON PROJECT: _____ NO. OF GRADUATE STUDENT MAN-YEARS: _____

SUMMARY OF PROPOSED WORK: (200-300 words, omit Confidential Data). Summaries are exchanged with government and private agencies supporting research, are supplied to investigaters upon request, and may be published in AEC documents. Make summaries substantive, giving initially and for each annual revision the following: OBJECTIVE; SCIENTIFIC BACKGROUND FOR STUDY; PROPOSED PROCEDURE; TEST OBJECTS AND AGENTS.

Skin permeation is the least-studied of the routes by which radioiodine may reach the thyroid. The epidermis, the outer layer of the skin, is the chief barrier of this route. The objectives of the program are direct measurements of the permeability of human epidermis to vapors of elemental iodine or methyl iodide, two chemical forms of radioiodine known to occur in the atmosphere. The results of these measurements will permit better estimates of the hazard of skin exposure to radioiodine, better evaluation of the consequences of reactor accidents, and will be of assistance in the design of protective equipment to be used in areas contaminated with radioiodine.

The permeability measurements are made by exposing membranes of separated human epidermis to known concentrations of radioactive iodine or methyl iodide and periodically measuring the rate of radioiodine penetration thru the epidermis.

RESULTS TO DATE: Past work, reported in IN-1345, showed that separated human epidermis has a large (P_k ~1 cm/min) apparent permeability to elemental iodine vapor. This apparent permeability is the result of a large surface iodine concentration formed by iodine deposition on the epidermis. If, as expected, this permeability is typical of intact skin, the thyroid dose received thru the skin in a prolonged whole body exposure will be comparable to the inhalation dose. Recent work showed that separated epidermis is relatively impermeable to methyl iodide vapor.

	PROGRAM CATEGORY NO.
BUDGET	
PRIMARY	
SECONDARY	

Fred Cartan
Signature of Principal Investigator

DATE: 4-29-70

INVESTIGATOR – DO NOT USE THIS SPACE